

## REMARKS

Claims 1-4, 8-14, 18-24, and 28-30 are currently pending. Claims 1, 2, 11, 12, 21, and 22 have been amended. No new matter has been added to the claims.

## CLAIM REJECTIONS UNDER 35 U.S.C. § 103(a)

### Independent Claims 1, 11, and 21

The Office Action rejects independent claims 1, 11, and 21 under 103(a) as unpatentable over U.S. Patent App. Pub. No. 2004/007854 to *Cirne et al.* (“*Cirne*”), in view of U.S. Patent No. 7,089,460 to *Fu* (“*Fu*”), and further in view of U.S. Patent No. 6,658,652 to *Alexander III et al.* (“*Alexander*”).

Amended Claims 1, 11, and 21 recite, in part:

“...generating a statistics report including the generated stack walkback for the at least one identified software object, wherein the statistics report is generated before the occurrence of an out-of-memory error and in a format that indicates a location of an executing logic at a time of the out-of-memory error, and wherein the generated statistics report identifies the location of at least one memory leak in the software program.”

However, neither *Cirne*, *Fu*, *Alexander* nor their combination teach or suggest the above-quoted claim limitations. First, the Examiner concedes on page 6 of the Office Action that:

“*Cirne* and *Fu* does not teach: generating a statistics report including the generated stack walkback for the at least one identified software object wherein the statistics report is generated before the occurrence of an out-of-memory error and in a format that indicates a location of an executing logic at a time of the out-of-memory error and wherein the generated statistics report identifies the likely location of at least one memory\_ [sic] leak in the software program.”

Thus, the Examiner relies solely on the *Alexander* reference in rejecting the above claim limitations recited in Claims 1, 11, and 21. In particular, the Examiner has cited two separate sections within the *Alexander* reference: (a) col. 17, lines 38-53; FIG. 11B (hereinafter “section (a)”); and (b) col. 18, lines 12-34 (hereinafter “section (b)”).

The Examiner asserts that the generation of a stack walkback is taught by col. 17, lines 38-53 and FIG. 11B of *Alexander*. However, Applicant respectfully disagrees. Section (a) of

*Alexander* does not teach the generation of a statistics report that includes the generation of a stack walkback. As defined by ¶[0029] of Applicant's Specification: "a stack walkback (also known as a Java stack trace) is a user-friendly snapshot of 'threads' and 'monitors' executing in a JVM. A stack walkback is used to track the history of an object instance to determine the point it was created."

In contrast, *Alexander* teaches the generation of a call stack tree, which reflects call stacks observed during a system execution. Referring to FIG. 11B of *Alexander*, the call stack tree is comprised of nodes in which statistics are kept for each node in the call stack tree. Each node in the call stack tree represents a function entry point (*Alexander*, col. 16, 62-65). A stack walkback, as defined by Applicant's claimed invention, is not focused on function entry point(s), but rather on threads and monitors executing in a Java Virtual Machine (JVM).

The Examiner next asserts that section (b) of *Alexander* teaches that a statistics report is generated in a format that indicates a location of an executing logic at a time of an out-of-memory error and identifies the likely location of at least one memory leak in the software program. Again, Applicant respectfully disagrees. The tree structure taught by *Alexander* is used to track memory allocation and deallocation metrics associated with object processing initiated on behalf of an executing method. For example, *Alexander* describes a call stack tree which reflects call stacks observed during a specific example of system execution. At each node in the call stack tree, several statistics are recorded:

- 1.) the number of distinct times the call stack is produced,
- 2.) the sum of the time spent in the call stack,
- 3.) the total time spent in the call stack plus the time in those call stacks invoked from this call stack (referred to as cumulative time), and
- 4.) the number of instances of a routine above a particular instance (indicating a recursion depth)

While *Alexander* tracks performance data, it should be noted that statistics 1.) through 4.) in *Alexander* are all specifically stated to be "time-based statistics" (*Alexander*, col. 17, lines 26-37). *Alexander* fails to teach or suggest a location of an executing logic at a time of an out-of-memory error. At best, *Alexander* is used to merely detect the presence of a memory leak.

Since *Cirne*, *Fu*, and *Alexander* independently fail to teach or suggest the limitations recited in amended Claims 1, 11, and 21, the references cannot be properly combined for purposes of §103(a) to teach or suggest Applicant's claimed invention.

#### **Dependent Claims 10, 20, and 30**

The Office Action rejects dependent claims 10, 20, and 30 under 103(a) as unpatentable over *Cirne*, in view of *Fu*, further in view of *Alexander*, and further still in view of U.S. Patent No. 6,189,141 to *Benitez et al.* ("*Benitez*").

Claim 10 (and similarly claims 20 and 30) recite, in part:

"upon determining that the amount of available memory for the software program referencing the software objects is within the predetermined threshold amount of memory from zero memory available for the software program utilizing the software objects, storing a current stack walkback of currently referenced software objects prior to the amount of available memory for the software program referencing software objects dropping below an amount of available memory necessary to store the current stack walkback."

The Examiner has cited *Benitez* to assert that the reference teaches the above cited limitation. However, Applicant respectfully disagrees. *Benitez* teaches that when an overflow condition is present (i.e., a hot trace storage area is becoming full), cold traces within the hot trace storage area are removed to make storage space for additional hot traces; see col. 35, lines 29-40 of *Benitez*). *Benitez* does not teach storing a current stack walkback when it is determined that the amount of available memory is within a threshold, as recited in claims 10, 20 and 30. Thus, in *Benitez*, the cold traces that were previously stored in the hot storage area are not stored. Rather, the cold traces are removed altogether, according to *Benitez*.

#### **Dependent Claims 2-4, 8, 9, 12-14, 18, 19, 22-24, 28, and 29**

The Office Action rejects dependent claims 2-4, 8, 9, 12-14, 18, 19, 22-24, 28, and 29 under 103(a) as unpatentable over U.S. Patent App. Pub. No. 2004/007854 to *Cirne et al.* ("*Cirne*"), in view of U.S. Patent No. 7,089,460 to *Fu* ("*Fu*"), and further in view of U.S. Patent No. 6,658,652 to *Alexander III et al.* ("*Alexander*"). In response, Applicant respectfully submits

that the abovementioned claims are allowable at least by virtue of their dependence upon allowable base claims 1, 11, or 21.

### CONCLUSION

Since nothing in *Cirne, Fu, Alexander, Benitez* or their combination teaches or suggests the foregoing limitations in amended Claims 1, 11, and 21, it follows that the grounds for rejecting claims 1-30 and all the pending claims depending therefrom have been overcome. Based on the above amendments and these remarks, reconsideration of pending claims 1-4, 8-14, 18-24, and 28-30 is respectfully requested.

The Examiner's prompt attention to this matter is greatly appreciated. Should further questions remain, Applicant invites the Examiner to contact the undersigned attorney of record at (512) 343-6116 if such would further or expedite the prosecution of the present Application.

The Commissioner is authorized to charge any underpayment or credit any overpayment to IBM CORPORATION Deposit Account No. **09-0447** for any matter (except for extensions of time which shall be charged to DILLON & YUDELL Deposit Account **50-3083**) in connection with this response.

Respectfully submitted,



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